

**REMARKS:**

This paper is herewith filed in response to the Examiner's final Office Action mailed on November 9, 2009 for the above-captioned U.S. Patent Application. This office action is a final rejection of claims 1-3, 7-20, 25-36, and 42-46 of the application.

More specifically, the Examiner has rejected claims 19-20, 25-36, and 42-46 under 35 USC 112, second paragraph, as being indefinite; rejected claims 9-10, 27-28, and 42 under 35 USC 112, first paragraph, as failing to comply with the written description requirement; rejected claims 19-20, 25-36, and 42-46 under 35 USC 101 asserting the claimed invention is drawn to non-statutory subject matter; rejected claims 1-3, 7, 9-17, 19-20, 25, 27, and 29-35 under 35 USC 103(a) as being unpatentable over Allen (Journal of Chemical Information and Computer Sciences, Vol. 17, No. 1, p. 9-15, 1977) in view of Brecher (US7,054,754), in view of Singh (Journal of Chemical Information and Computer Sciences, 2003, 43, 743-752), in view of Moore (US5,577,239) and in view of Cardinali (Industrial Management + Data Systems, Wemby: 1994 Vol. 94, Iss. 4, 3, 6 pgs); rejected claims 8 and 26 under 35 USC 103(a) as being unpatentable over Allen, in view of Brecher, in view of Singh, in view of Moore, and in view of Cardinali, and further in view of Vander Stouw (Journal of Chemical Documentation, Vol. 14, No. 4, p. 185-193, 1974); rejected claims 18 and 36 under 35 USC 103(a) as being unpatentable over Allen, in view of Brecher, in view of Singh, in view of Moore, in view of Cardinali, and further in view of Kemp (Chem. Inf. Comput. Sci., Vol. 38); rejected claims 43-45 under 35 USC 103(a) as being unpatentable over Allen, in view of Brecher, in view of Singh, in view of Moore, in view of Cardinali, and further in view of Shivaratri (Computer December 1992); and rejected claim 46 under 35 USC 103(a) as being unpatentable over Allen, in view of Brecher, in view of Singh, in view of Moore, in view of Cardinali, in view of Shivaratri, in view Vander Stouw, in view of Drehfal, and in view of Murray-Rust (New Chem. Vol. 25, p 618-634, 2001)

Claims 1, 19, 25, 29-30, 36, 43, and 45 have been amended for clarification. Support for the amendments can be found at least on page 16, line 17 to page 17, line 6 and page 20, line 15 to page 21, line 16 of the Application. Claims 8, 26, and 46 have been cancelled. No new matter is

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added.

### Interview Summary

On December 18, 2009 the Applicant's Representative contacted the Examiner to discuss proposed amendments to address the 35 USC 112, second paragraph, and 35 USC 101 rejections presented in the Office Action dated November 9, 2009. The Applicant's Representative proposed the related claims amendments and support for the amendments in the Application. The Examiner indicated the amendments appeared to overcome the above mentioned rejections and the Applicant's representative indicated that the claims would be amended similarly as discussed. Further, the Applicant's Representative and the Examiner discussed aspects of support in the Application for computer program storage according to the embodiments of the invention. However, no determinations were reached regarding this matter. The Applicant's Representative thanks the Examiner for his time addressing the questions raised. The Applicant's Representative submits that this Interview Summary is sufficient as a Response to a PTOL-413 or any other form related to this conversation with the Examiner. As such, no further response regarding this matter will be provided.

First, with regards to the rejections of claims 19-20, 25-36, and 42-46 under 35 USC 101 and the rejection of claims 19-20, 25-36, and 42-46 under 35 USC 112, second paragraph, the Applicants note that, as stated above in the Interview Summary, the claims have been amended to overcome the rejections. Thus, the Applicants respectfully request that the rejections be removed.

Regarding the rejection of claims 9-10, 27-28, and 42 under 35 USC 112, first paragraph, the Applicants respectfully disagrees with the rejection. In the rejection the Examiner appears not to consider that these claims rejected under 35 USC 112, first paragraph, relate to dictionaries applied for use in partitioning text of a text document to recognize chemical name fragments.

This is seen to be the case for at least the reason that the rejection cites where the Application discloses that "The aforementioned dictionaries of the system 700 can include a prefix dictionary

708 (containing a list of common prefixes for the technical terms of interest), a suffix dictionary 710 (containing a list of common suffixes for the technical terms of interest), and an optional negative dictionary 712,” (page 18, lines 6-9). However, the Applicants submit that the system 700 includes operations modules relating, but not limited, to recognizing chemical name fragments as well as substructure recognition and indexing. Thus, the Applicants submit that the system 700 is not limited to dictionaries, as recited in claims 9-10, 27-28, and 42, for use in partitioning text of a text document to recognize chemical name fragments.

The Applicants submit that the limitations disclosed in claims 9-10, 27-28, and 42 are supported at least where the Application discloses:

“Furthermore, only relatively small dictionaries need to be used,” (page 7, line 4);  
and

“By way of introduction, this invention uses a series of regular expressions, rules, and two small dictionaries to recognize chemical name fragments and combine them into organic chemical names,” (page 9, lines 5-6).

Moreover, the Applicants note that the Application makes make particular reference to a commonly assigned patent application Ser. No. 10/670,675 in regards to mining information from text documents without the need to provide large chemical dictionaries (see page 10 line 17 to page 11, line 4).

The Applicants submit that, for at least these reasons, the subject matter of claims 9-10, 27-28, and 42 are described in the specification in such a way as to reasonable convey to one skilled in the art that the inventors, at the time the invention was filed, had possession of the claimed invention. Thus, the Applicants contend that the rejection of these claims under 35 USC 112, first paragraph, should be removed and the claims allowed.

Furthermore, the Applicants note that in the Office Action the Examiner states “Regarding claim 9, Allen et al. shows that dictionaries consisting of a prefix(start) and a suffix (stop) are applied until the end of a name is reached (p. 13, col. 1),” (see page 9 of the Office Action). The

Applicants disagree with the Examiner. The Applicants submit that, as cited, Allen refers to syntax analysis using locations of characters and a character position in a name (see Allen page 13).

Moreover, the Applicants note that Allen as cited with regards to the rejection of claim 1 discloses "Syntax analysis is performed by reference to input lists of common chemical prefixes, suffixes, derivative names, and a list of element-name roots," (see Allen page 9 column 1).

The Applicants submit that Allen does not disclose or suggest at least where claim 9 relates to where the plurality of dictionaries consists of the dictionary of common chemical prefixes and the dictionary of common chemical suffixes.

In addition, the Applicants submit that none of the references cited disclose or suggest claims 9-10, 27-28, and 42. Therefore, the Applicants submit that the rejections of these claims should be removed and that claims 9-10, 27-28, and 42 be allowed.

Regarding the rejection of claim 1 under 35 USC 103(a) the Applicants disagrees with the rejection. However, the Applicants submit that, in order to further prosecution of the instant Application to an Allowance, claim 1 has been amended for further clarification to recite features, according to the exemplary embodiments of the invention, similar to claim 8 which relate to a process for indexing recognized chemical name fragments in MOL file and SMILES representations. Further, the Applicants note that claim 8 has been cancelled. Support for this amendment can be found at least on page 10, lines 11-12 and page 13, lines 18-20 of the Application.

The Applicants note that with regards to claim 8, now similarly incorporated into claim 1, the Examiner states that "Allen et al., in view of Brecher, in view of Singh et al., in view of Moore et al., and in view of Cardinali do not show a testing if a fragment name occurs in a structure dictionary in SMILES format or MOL file format," and "Vander Stouw et al. does not show the SMILES or MOL formats of connection tables," (see Office Action page 14).

Further, the Applicants note that the Examiner states:

“Drefahl et al. teach a SMILES structure dictionary (abstract, sent. 3). Drefahl et al. shows representations comprising SMILES type representations (p888),” and

“Murray-Rust et al. shows chemical representations can be MOL type representation and SMILES type representations (p. 626). Murray-Rust et al. shows MOL type representations have the advantage of being extremely terse (p. 626, col. 1),” and

“It would have been further obvious to one of ordinary skill in the art at the time of invention to combine the teachings Allen et al., in view of Brecher, in view of Singh et al., in view of Moore et al., and in view of Cardinali as applied to claims 1-3, 7, 9-17, 19-20, 25, 27, and 29-35 above and Vander Stouw et al, with the SMILES and MOL notations of Drefahl et al. and Murray Rust et al. because Drefahl et al. and Murray-Rust et al. show that SMILES and MOL notations provides a compact and computationally amenable way to encode chemical structure information. One would have had a reasonable expectation of success because Drefahl et al. describe the successful application of a SMILES dictionary structure-based retrieval and searching,” (see page 15 of the Office Action).

The Applicants disagree with the Examiner. First, the Applicants submit that Drefahl relates to a database consisting of data files which includes a number of data entries and compounds represented in SMILES notation (see Drefahl page 889, 2<sup>nd</sup> column). According to Drefahl a data evaluation system for organic compounds (DESOC) automatically identifies candidate compounds in the database, which exhibit a structural similarity to a query compound (see page 886, column 2). The Applicants submit that Drefahl does not relate to an operation of indexing representations of recognized chemical name fragments and substructures in association with determined structural connectivity information by testing each recognized fragment to see if the recognized fragment occurs in a dictionary of SMILES fragments and if it does adding a SMILES expression for the fragment to a chemical substructure index. Rather, the Applicants submit that in Drefahl candidate compounds are identified by an input query which includes the SMILES notation so as, apparently, to get a match in the database and retrieve the data entries (see page 890, column 1).

Further, the Applicants submit that Murray-Rust merely discloses a method to identify chemical markup language in a web page using XML (see page 618 column 2). The Applicant submits that the Examiner appears to cite where Murray-Rust identifies that Molfile language as, apparently, posing difficulties with XML. According to Murray-Rust "Additional information [...] is not extracted from the Molfile file, since, although such information might be supplied using comments, it is not automatically identifiable," (page 626, column 2). Thus, the Applicants submit that it is not clear if Murray-Rust is even able to readily identify a Molfile. In any case, the Applicants contend that Murray-Rust does not relate to an operation of indexing representations of recognized chemical name fragments and substructures in association with determined structural connectivity information by testing each recognized fragment to see if the recognized fragment occurs in a dictionary of SMILES fragments and then if it is recognized in a MOL file dictionary.

In addition, the Applicants submit that none of the references cited disclose or suggest at least where claim 1 recites in part:

"providing a graphical user interface to search the text index and the chemical substructure index, where the search comprises first entering search terms comprising one or more chemical fragment names and then selecting graphical representations of one or more substructures, where the selecting comprises using the graphical user interface as a pointer to a graphical list of substructures; and

receiving a search result, where the search result is an intersection of the chemical substructure index and the text index, identifying at least one document where there are found chemical compounds that contain the selected substructures, and connectivity specified by the one or more chemical fragment names and the selected substructures"

In the rejection the Applicants note that the Examiner merely states:

"Cardinali et al. shows graphical user interfaces (GUI). Cardinali shows that GUIs have at least seven benefits: providing the ability to complete work faster; providing the ability of correctly completing tasks; increasing productivity; reducing user frustration; reducing fatigue; making software easier to learn; and easier to explore capabilities of the software," (page 12 of the Office Action).

However, the Applicants contend that neither Cardinali nor any of the other references cited disclose or suggest the above described elements of claim 1. The Applicants submit that Cardinali merely describes perceived benefits of graphical user interfaces in general.

Furthermore, the Applicants submit that Cardinali does not reference any operation which relates to selecting one or more substructures and receiving a search result which is an intersection of a chemical substructure index and a text index, identifying at least one document where there are found chemical compounds that contain the selected substructures, and connectivity specified by the one or more chemical fragment names and the selected substructures.

The Applicants submit that, for at least the reasons stated, even if the references were combined, which is not agreed to as proper, the proposed combination would still not disclose or suggest claim 1. Thus, the applicants submit that the rejection of claim 1 should be removed and claim 1 should be allowed.

Further, as the independent claim 19 distinguishes over the references for reasons similar to those detailed for claim 1 as stated above, the references are not seen to disclose or suggest all of claims 1 and 19. Thus, the rejections of these claims should be removed.

Regarding independent claim 43, the Applicants submit that for at least the reason that claim 43 recites features similar to claim 1, as stated above, claim 43 is also distinguishable over the references for at least the reasons already stated.

With regards to the rejection of claim 2 the Examiner states:

“Regarding claim 2, Singh et al. shows that keywords that are not chemical names may also be used to search (p. 746, col. 1). Singh et al. shows searching text and structure takes advantage of the contextual knowledge developed by scientists within the pharmaceutical, biological, and medicinal chemistry community (p. 751, col. 2),” (page 11 of Office Action).

First, the Applicants submit that, for at least the reasons already stated with regards to claim 1, none of the references cited can be seen to disclose or suggest where claim 1 relates to a search and results received using a graphical user interface.

In addition, the Applicants submit that Singh, as cited, merely discloses:

“the user specifies one or more words and/or chemical structures as a probe,” and

“The frequency of occurrence of the words and the chemical descriptors are used to create a probe vector,” (Singh page 745, column 2).

The Applicants contend that Singh does not disclose or suggest at least where claim 2 recites in part:

“wherein the search further comprises first entering search terms comprising the one or more chemical fragment names and entering at least one keyword, and where the search result is identifying at least one document where there are found the at least one keyword, the chemical compounds that contain the selected substructures, and the connectivity specified by the one or more chemical fragment names and the selected substructures”

Thus, the Applicants contend that even if the search methodology as cited in Singh were somehow combined with the user interface of Cardinali, which is not agreed to as proper, the combination would merely result in a graphical user interface where a user specifies one or more words and/or chemical structures as a probe and as a result the user receives a probe vector based on a frequency of occurrence of the words and the chemical descriptors.

The Applicants contend that neither Singh nor Cardinali discloses or suggests at least where claim 2 recites in part:

“wherein the search further comprises first entering search terms comprising the one or more chemical fragment names and entering at least one keyword, and where the search result is identifying at least one document where there are found the at least one keyword, the chemical compounds that contain the selected



substructures, and the connectivity specified by the one or more chemical fragment names and the selected substructures”

Therefore, the Applicants submit that, for at least this reason the rejection of claim 2 is improper and the rejection should be removed.

Further, for at least the reason that claims 20 and 44 recite features similar to claim 2, as stated above, the references cited do not disclose or suggest these claims and the rejections of these claims should be removed.

In addition, the Applicants contend that for at least the reasons already stated with regards to the rejection of claims 9-10, 27-28, and 42 under 35 USC 112, first paragraph, the references cited can not be seen to disclose or suggest at least where claim 9 recites in part “where said plurality of dictionaries consists of the dictionary of common chemical prefixes and the dictionary of common chemical suffixes.” Thus, the rejection of claim 9 should be removed and claim 9 should be allowed.

Further, for at least the reason that claim 27 recites features similar to claim 9, as stated above, the references cited do not disclose or suggest this claim. Therefore, the rejection of claim 27 should be removed and claim 27 should be allowed.

Additionally, for at least the reasons stated with regards to the rejection of claims 9-10, 27-28, and 42 under 35 USC 112, first paragraph, the references cited can not be seen to disclose or suggest at least where claim 10 recites in part “where said plurality of dictionaries consists of the common chemical prefix dictionary and the common chemical suffix dictionary, and a dictionary of stop words to eliminate erroneous chemical name fragments.” Thus, the rejection of claim 10 should be removed and claim 10 should be allowed.

In addition, the Applicants submit that although not all the rejections are argued in this Response, the Applicants do not acquiesce to these rejections.

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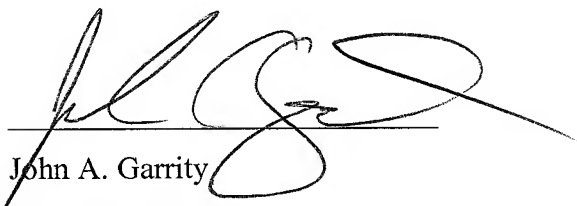
Further, for at least the reason that claims 28 and 42 recites features similar to claim 10, as stated above, the references cited do not disclose or suggest these claims. Therefore, the rejection of claims 28 and 42 should be removed and claims 28 and 42 should be allowed.

In addition, for at least the reason that claims 2-3, 7, and 9-18; claims 20, 25, and 27-36; and claims 42 and 44-45 depend from independent claims 1, 19, and 43, respectively, the references cited are not seen to disclose or suggest all these claims and the rejection of all these claims should be removed.

Based on the above explanations and arguments, it is clear that the references cited cannot be seen to disclose or suggest claims 1-3, 7, 9-20, 25, 27-36, and 42-45. The Examiner is respectfully requested to reconsider and remove the rejections of all claims and to allow all of the pending claims 1-3, 7, 9-20, 25, 27-36, and 42-45.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Should any unresolved issue remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted:



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